HANDBOOK OF PHONOLOGICAL DATA

FROM A SAMPLE OF THE WORLD'S LANGUAGES

A Report of the Stanford Phonology Archive

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270 Hindi-Urdu	270 Hindi-Urdu	270 Hindi-Urdu

Column 1

270   01 p

270   02 p-long

270   03 p-aspirated[01]

270   04 p-aspirated-long[01]

270   05 b
[b-prenasalized][60]

270   06 b-long

270   07 b-breathy voice[01]
[b-prenasalized-breathy voice][60]

270   08 b-breathy voice-long[01]

270   09 t-dental

270   10 t-dental-long

270   11 t-dental-aspirated[01]

270   12 t-dental-aspirated-long[01]

270   13 d-dental
[d-dental-prenasalized][60]

270   14 d-dental-long

270   15 d-dental-breathy voice[01]
[d-dental-prenasalized-breathy voice][60]

270   16 d-dental-breathy voice-long[01]

270   17 t-retroflex[02]

270   18 t-retroflex-long[02]

270   19 t-retroflex-aspirated[01] [02]

270   20 t-retroflex-aspirated-long[01] [02]

270   21 d-retroflex[02]
*[r-flap-retroflex-nasalized]
[r-flap-retroflex][61]
[d-retroflex-prenasalized][60]

270   22 d-retroflex-long[02]

270   23 d-retroflex-breathy voice[01] [02]
[r-flap-retroflex-breathy voice][61]
[d-retroflex-prenasalized-breathy voice][60]

270   24 d-retroflex-breathy voice-long[01] [02]

270   25 k

270   26 k-long

270   27 k-aspirated[01]

270   28 k-aspirated-long[01]

270   29 g

Column 2

*[eng]
[g-prenasalized][60]

30 g-long

31 g-breathy voice[01]
[g-prenasalized-breathy voice][60]

32 g-breathy voice-long[01] [30]

33 q
(loan)

34 q-long
(loan)

35 t/s-hacek[03]

36 t/s-hacek-long[03]

37 t/s-hacek-aspirated[01] [03]

38 t/s-hacek-aspirated-long[01] [03]

39 d/z-hacek[03]
[d/z-hacek-prenasalized][60]

40 d/z-hacek-long[03]

41 d/z-hacek-breathy voice[01] [03]
[d/z-hacek-prenasalized-breathy voice][60]

42 d/z-hacek-breathy voice-long[01] [03]

43 f[32]
(loan)
[phi][62]
(free)

44 f-long[33]
(loan)

45 s

46 s-long

47 z[33]
(loan)

48 z-long[33]
(loan)

49 s-hacek[36]
(loan)
[s-retroflex][04] [37]
(free)

50 s-hacek-long[36]
(loan)

51 z-hacek[38]
(loan)

52 x-uvular[05] [33]
(loan)

53 gamma-uvular[06] [33]
(loan)

54 m
[beta-approximant-nasalized]

Column 3

55 m-long

56 m-breathy voice[01] [41]
[beta-approximant-breathy voice-nasalized][63]
(free)

57 n-dental
[n-retroflex][64] [65]
*/r-flap-retroflex-nasalized/
[n-palatal][65]
[eng][65] [66]
*/g/

58 n-dental-long

59 n-dental-breathy voice[01] [41]

60 l
[l-nasalized][67]

61 l-long

62 l-breathy voice[01] [41]

63 r-trill[07]

64 r-trill-long

65 r-flap-retroflex-nasalized[43]

(allo,loan)
*/d-retroflex/
*[n-retroflex]

66 v-approximant
[beta-approximant][75]
[w][68]
[v-approximant-nasalized][69]

67 v-approximant-long

68 glottal stop[44]
(loan)

69 h-voice[01]
[h][70]
[h-voice-nasalized][69]

50 i-long[08]
[i-breathy voice-long][71]

51 i-long-nasalized[08] [09]

52 iota
[e][72]
[iota-breathy voice][71]

53 iota-nasalized[09]

54 e-long[08]
[e-breathy voice-long][71]

55 e-long-nasalized[08] [09]

56 ash/e-glide
[ash-long][73]

270 Hindi-Urdu	270 Hindi-Urdu	270 Hindi-Urdu
(free) [epsilon-dot/e-glide][73] (free) [ash/e-glide-breathy voice][71]	63 u-long[08] [u-breathy voice-long][71]	70 o-open/o-glide [o-open-long][73] (free) [epsilon-dot/o-glide][73] (free) [o-open/o-glide-breathy voice][71]
270 57 ash/e-glide-nasalized[09] [45] (limited)	64 u-long-nasalized[08] [09]	
270 58 iota-bar[46] (loan)	65 upsilon [o][72] [upsilon-breathy voice][71]	71 o-open/o-glide-nasalized[09] [45] (limited)
270 59 epsilon-dot [ash-breathy voice][74]	66 upsilon-nasalized[09]	72 alpha-unrounded[48] (loan)
270 60 epsilon-dot-nasalized[09]	67 o-long[08] [o-breathy voice-long][71]	73 yod [yod-nasalized][69]
270 61 a-long[08] [a-breathy voice-long][71]	68 o-long-nasalized[08] [09]	74 yod-long
270 62 a-long-nasalized[08] [09]	69 o-open-breathy voice[47] (limited)	

270    $a Hindi-Urdu $A Hindi $A Urdu $A Hindustani $A Khari Boli $b Standard Hindi-Urdu $d Indic $e
India; Pakistan $f 60 million $g Gary Holland $g John Crothers (review)

270    $a Kelkar, Ashok Ramchandra $b 1968 $c Studies in Hindi-Urdu I: Introduction and Word Phonology
$g Poona: Deccan College, Postgraduate and Research Institute $q author is native speaker

270    $a Vermeer, Hans J. and Aryendra Sharma $b 1966 $c Hindi-Lautlehre $g Heidelberg: Julius Groos
Verlag $q coauthor is native speaker

270    $a Pinnow, Heinz-Juergen $b 1953 $c Ueber die Vokale im Hindi $d Zeitschrift fuer Phonetik und
allgemeine Sprachwissenschaft 7.43-53

270    $a Srivastava, R.N. $b 1969 $c review of Kelkar: Studies in Hindi-Urdu I. $d Language,
45.913-927 $s Criticizes Kelkar from generative standpoint. No additional data.

270    $a ACCENT $A In isolation every Hindi-Urdu word has a predictable accent, which phonetically
"consists of extra length to the coda non-syllabics or (in case there is no coda) to the
nucleus." Position of the main accent is determined by the heaviness of syllables. A "light"
syllable ends in a short vowel; a medium syllable ends in a long vowel or short vowel followed
by a single consonant; other combinations are heavy. The main accent falls on the heaviest
syllable or on the next to last of several equally heavy syllables. A secondary accent falls on
heavy syllables preceding the main accent; otherwise secondary accent falls on alternate
syllables, reckoning from the main accent. (p.26f)

270    $a BREATHINESS PROSODY $A In some respects breathiness acts like a prosodic feature. In
segmental terms the breathy phonemes are /h-voice/, the aspirated stops and the breathy voice
consonants, but this feature expands beyond segmental boundaries. For one thing all vowels are
allophonically breathy voice before /h-voice/ in the same syllable, and in rapid speech these
fuse into a single breathy voice unit. The sequence /epsilon-dot.h-voice/ may simply become
aspiration (breathy voice) on the preceding consonant. In some cases /h-voice/ may shift from
post-vocalic to prevocalic position, becoming aspiration of the preceding consonant. Also,
sequences of voiced consonant plus /h-voice/ may become breathy voice consonants. Finally, in
less formal speech styles there is a type of Grassmann's Law by which the second aspirate in a
word, whether it is /h-voice/ or a feature on a consonant, is dropped, leaving a single stretch
of breathiness in the word.

270    $a NASAL VOWEL PROSODY $A If the last vowel in a sequence of vocoids (including vowels, glides,
and /h-voice/) is nasalized partial nasalization extends through the whole sequence. (p.38)

270    $a RETROFLEXED VOWELS (NON-DISTINCTIVE) $A "A vowel adjacent to a tautosyllabic retroflex
consonant is slightly retroflexed - also, 'iota, upsilon, epsilon-dot' are lower and 'a-long'
is more retracted." (p.24f)

270    $a SYLLABLE $A (C)(G)V(C) $A Word medially there are a few cases of syllable initial or final
consonant clusters, involving "sequences of the type 'nnt, rtt, ttt'" which are not necessarily
broken up by a transitional vowel. Otherwise the syllable canon holds true for all native
words. (p.64ff)

270 01 $A V & S say that aspiration is weak or lost altogether syllable finally. (p.24) Kelkar
mentions this only for voiced aspirates (=breathy voice). (p.24) In any case there is great
variability in aspiration. See note on breathiness prosody.

270 02 $A According to Kelkar the retroflex stops are "postalveolar" for Hindi speakers, "cacuminal"
for Urdu speakers. (p.23)

270 03 $A The palatoalveolar affricates have no lip rounding. (V & S, p.ix)

270 04 $A [s-retroflex] is "not a true retroflex, but more like [s-hacek] with the apex retracted and
raised and with darker quality." (p.31)

270 05 $A /x-uvular/ is "rather retracted and with uvular scrape." (p.32)

270 06 $A /gamma-uvular/ is even more retracted than /x-uvular/. (p.32)

270 07 $A /r-trill/ is "weakly trilled unless geminated." (p.24)

270 08 $A Half-long variants of long vowels occur in the second syllable of disyllabic words, in all
syllables of words of more than two syllables, and also prevocalically. (V & S, p.9) Kelkar
says that the long vowels are progressively longer from high to low, and from front to back.
(p.24)

270 09 $A Pinnow (p.46) mentions that nasalized breathy voice vowels occur, but gives only one example.

270 30 $A No example of /g-breathy voice-long/ is found in discussions of geminates by Kelkar (p.64ff)
and Vermeer and Sharma (p.36ff, p.48f).

270 31 $A /q/ is characteristic of Urdu. Uneducated Hindi speakers replace it with /k/. (p.31f;
Vermeer and Sharma, p.4-5)

270 32 $A /f/ is characteristic of Urdu. Uneducated Hindi speakers replace it with /p-aspirated/.
(Vermeer and Sharma, p.4-5)

270 33 $A /f-long/, /z/, /z-long/, /x-uvular/, and /gamma-uvular/ are characteristic for Urdu.
Uneducated Hindi speakers replace them with /p-aspirated-long/, /d/z-hacek/, /d/z-hacek-long/,
and /k-aspirated/ (for both uvulars), respectively. (Vermeer and Sharma, p.4-5)

270 36 $A /s-hacek/ occurs in both Sanskrit and Persian loans. Replaced by /s/ in familiar speech.
(p.31)

270 37 $A [s-retroflex] is restricted to Hindi pronunciation of Sanskrit loans. (p.31)

270 38 $A /z-hacek/ is found only in Persian loanwords in Urdu. Such loans are usually not used in
Hindi. (p.32; V & S, p.4-5)

270 41 $A /m-breathy voice/, /n-dental-breathy voice/, /l-breathy voice/ are limited to medial
position. (p.28)

270 43 $A /r-flap-retroflex-nasalized/ is found as a separate phoneme only in the pronunciation of
loan words from Sanskrit by educated Hindi speakers who know that language. Uneducated Hindi
speakers and all Urdu speakers replace it with /n-dental/. (p.36f; V & S, p.5)

270 44 $A /glottal stop/ occurs only in Urdu. Corresponds to "ain," or rarely, "hamzaa," in Persian
orthography. "Now very definitely a mark of affectation rather than elegance." (p.32f)

270 45 $A Concerning /ash/e-glide-nasalized, o-open/o-glide-nasalized/ Kelkar (p.55) says the
contrasts between nasalized higher-mid and lower-mid (here higher-low) vowels "are not firmly
established." He restricts the higher-mid nasalized vowels to Hindi or Urdu social dialects,
seeming to indicate that the standard Hindi-Urdu pronunciation has only the lower vowels (i.e.
[epsilon] or [ash] nasalized). On the other hand, the nasalized vowels are supposed to be
higher than the oral ones (see also p.24), so their quality is hard to determine.

270 46 $A /iota-bar/ only occurs in Sanskrit loans after /r-trill/ or /l/. (p.52)

270 47 $A /o-open-breathy voice/ occurs only as a variant of the sequence
[epsilon-dot.h-voice.upsilon], and is either preceded or followed by [h-voice]. (p.49f)

270 48 $A /alpha-unrounded/ occurs in English loans. (p.52)

270 60 $A Voiced and breathy voiced stops and affricates are prenasalized after a nasalized vowel.
(p.24)

270 61 $A /d-retroflex, d-retroflex-breathy voice/ are realized as [r-flap-retroflex,
r-flap-retroflex-breathy voice] intervocalically (except when /r-trill/ follows immediately in
the next syllable), word finally, and adjacent to any consonant except /r-trill, v-approximant,

yod/ and the retroflex stops. (p.39f) This rule does not apply in some words of Sanskrit origin, usually when morpheme boundary directly precedes the retroflex. When the preceding vowel is nasalized /d-retroflex/ is realized as [r-flap-retroflex-nasalized]. No examples with the breathy voice counterpart. (p.41)

270 [62] $A [phi] is a free variant of /f/ adjacent to tautosyllabic back rounded vowels. (p.32)

270 [63] $A /m, m-breathy voice/ are realized as [beta-approximant-nasalized, beta-approximant-breathy voice-nasalized] intervocalically in rapid speech. (p.24)

270 [64] $A [n-retroflex] is the formal pronunciation of /r-flap-retroflex-nasalized/. (p.36)

270 [65] $A /n-dental/ is retroflex before retroflex stops, palatal before palatal stops, and velar before velar stops. (V & S, p.22)

270 [66] $A [eng] occurs as an allophone of /g/ between a nasal vowel and a following nasal consonant. In rapid speech velar stops may be completely nasalized following a nasal consonant. (p.36)

270 [67] $A /l/ is nasalized in a syllable with a nasalized vowel. (p.38)

270 [68] $A According to Kelkar (p.53) consonantal constriction of /v-approximant/ is optional in the tonic syllable and before /epsilon-dot/, and presumably absent elsewhere. He gives environments for three different glides: [w, upsilon-glide, o-glide]. In view of the highly restricted environments, only [w] has been coded.

270 [69] $A /v-approximant, h-voice, yod/ are nasalized adjacent to a nasalized vowel. (p.38)

270 [70] $A /h-voice/ has a voiceless on-glide initially. (p.24) (It is not clear whether this means a voiceless [h]. V & S say that "h" is always voiced. (p.xi))

270 [71] $A The non-nasalized vowels are breathy voice before /h-voice/. In rapid speech vowel and /h-voice/ fuse into a single breathy voice unit. (p.25) These are interpreted as separate phonemes by Pinnow.

270 [72] $A /iota, upsilon/ are realized as [e, o] word finally in Urdu. (p.46f.) Hindi retains the higher vowel. Final short vowels are rare, restricted to a few monosyllables, and to Persian and Sanskrit loans.

270 [73] $A /ash/e-glide, o-open/o-glide/ may be realized as [ash-long, o-open-long] in Urdu pronunciation and as [epsilon-dot/e-glide, epsilon-dot/o-glide] in Hindi pronunciation. (p.55)

270 [74] $A /epsilon-dot/ is realized as [ash-breathy voice] before /h-voice/ plus consonant or word boundary. (p.50)

270 [75] $A /v-approximant/ is realized as [beta-approximant] before /o-long/. (p.53)